

REMARKS

The specification has been amended at page 2, paragraph 1, to correctly identify the published Canadian patent application referred to therein.

Claims 1-18 are pending. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claims 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Akira et al. JP publication 2000305579 which was cited in the corresponding UK Search Report.

Claims 5-7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akira in view of Cesaro et al. (U.S. Pat. No. 5,533,118).

Claims 8, 10, 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akira in view of Cesaro and further in view of Lindgren et al. (U.S. Pat. No. 6,597,787).

Claims 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akira in view of Cesaro and Lindgren and further in view of Terada et al. (U.S. Pat. No. 6,861,591).

Reconsideration is requested.

Claims 1, 2, 7, 13, 15 and 16 are amended to clarify the present invention. Claims 5, 6, 8, 10, 11, 12, 14, 16 and 18 are cancelled.

The Examiner has objected to claims 12 and 18 under 35 U.S.C. 112. Claims 12 and 18 have been cancelled and accordingly, the Examiner's objection to these claims is now moot.

Claims 1-4 have been rejected under 35 U.S.C. 102(b) as the Examiner asserts that these claims are anticipated by Japanese Patent Application JP2000305579 to Akira. Claim 1 has been amended to read as follows:

1. For use in a conferencing system incorporating noise characteristic estimation of a first of two bidirectionally transmitted signals, the improvement comprising detecting at least one of voice activity and in-band tone activity in a signal transmitted in a first direction opposite to said first signal and in response ceasing said noise characteristic estimation.

The present invention as defined by amended claim 1 inhibits noise characteristic estimation in one direction (e.g. line-side or mic-side) responsive to audio signal activity in the opposite direction. For example, if a noise level estimate is being performed on the line-side (Figure 1a) then, according to the present invention as defined by amended claim 1, the noise level estimator (2) is inhibited or disabled responsive to audio activity being detected on the mic-side.

By way of contrast, the Akira reference teaches calculation of acoustic coupling gain between microphone 10 and speaker 11 using a voice switch VS to provide a control signal Vs to the switch 4. Consequently, rather than detecting audio activity in a direction opposite to the signal of interest, as defined by amended claim 1, noise power estimation block 2 of the Akira reference is disabled based on acoustic coupling gain, which is a completely different control characteristic. Thus, there is no teaching or suggestion of noise characteristic estimation of a first of two bidirectionally transmitted signals, detecting at least one of voice activity and in-band tone activity in a signal transmitted in a first direction opposite to said first signal and in response ceasing said noise characteristic estimation.

Further, with respect to amended claims 1-4, Cesaro teaches a voice detection method and apparatus that the Examiner relies upon to show detection of voice and tones on a telephone line. The Cesaro reference, however, fails to cure the deficiencies of the Akira reference. As previously stated, the Akira reference teaches a completely different control characteristic. It is therefore believed that there is no possibility of combining the cited

references to arrive at the presently claimed invention. It is therefore believed that ~~claims 1-4~~ fully distinguish over the cited references.

Claims 5-7, 9 and 11 have been rejected under 35 U.S.C. 103(a) as the Examiner asserts that these claims are unpatentable over Akira in view of United States Patent No. 5,533,118 to Cesaro.

Claims 5, 6 and 11 have been cancelled.

Amended claim 7 includes the recitation of:

"Apparatus for controlling noise characteristic estimation in a conferencing system, comprising:

a first noise characteristic estimator for estimating a noise characteristic of a signal of interest transmitted in a first direction through said conferencing system;

a first voice activity detector for detecting at least one of voice activity and in-band tone activity in a signal transmitted through said conferencing system in a direction opposite to said signal of interest and in response disabling the first noise characteristic estimator;

a second noise characteristic estimator for estimating a noise characteristic of a signal of interest transmitted in a direction opposite to said first direction, through said conferencing system; and

a second voice activity detector for detecting at least one of voice activity and in-band tone activity in a signal transmitted through said conferencing system in said first direction and in response disabling the second noise characteristic estimator."

By contrast with amended independent claim 7, neither of the cited references teach or suggest two voice activity detectors for detecting at least one of voice activity and in-band tone activity in a signal transmitted through said conferencing system in directions opposite

to said bidirectionally transmitted signals and in response disabling the opposing noise characteristic estimator. It is therefore believed that amended claim 7, and claim 9 which depends from claim 7, fully distinguish over the cited references.

Claims 8, 10, 12-14 and 16 have been rejected under 35 U.S.C. 103(a) as the Examiner asserts that these claims are unpatentable over Akira in view of United States Patent No. 5,533,118 to Cesaro and further in view of United States Patent No. 6,597,787 to Lindgren et al.

Claims 8, 10, 12, 14 and 16 have been cancelled and accordingly, the Examiner's rejection of these claims is now moot.

United States Patent No. 6,597,787 to Lindgren et al. teaches an echo cancellation device for cancelling echos in a transceiver. Lindgren et al, however, fail to teach or suggest: "at least two noise level estimators, one of said noise level estimators for estimating noise level in said line-in audio signal and the other of said noise level estimators for estimating noise level in said line-out audio signal; and

at least two voice activity detectors, one of said voice activity detectors for detecting voice activity in said line-in audio signal and in response disabling said other of said noise level estimators, and the other of said voice activity detectors for detecting voice activity in said line-out audio signal and in response disabling said one of said noise level estimators" as recited in claim 13.

Again, the Akira reference teaches a completely different control characteristic than that provided by the presently amended claims. As argued above, since there is no possibility of combining the references to arrive at the claimed invention of amended claim 7, that claim fully distinguishes over the cited references. Since claim 13 includes similar limitations, it is

believed that amended claim 13 and dependent claim 16 also fully distinguish over the cited references.

Claims 15, 17 and 18 have been rejected under 35 U.S.C. 103(a) as the Examiner asserts that these claims are unpatentable over Akira in view of Cesaro and Lindgren et al. and further in view of United States Patent No. 6,861,591 to Terada.

Claim 18 has been cancelled and accordingly, the Examiner's rejection of this claim is now moot.

Like Akira, Cesaro and Lindgren, Terada fails to teach or suggest: "at least two noise level estimators, one of said noise level estimators for estimating noise level in said line-in audio signal and the other of said noise level estimators for estimating noise level in said line-out audio signal; and

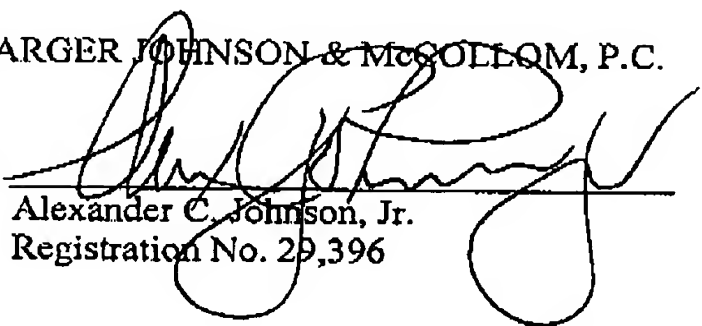
at least two voice activity detectors, one of said voice activity detectors for detecting voice activity in said line-in audio signal and in response disabling said other of said noise level estimators, and the other of said voice activity detectors for detecting voice activity in said line-out audio signal and in response disabling said one of said noise level estimators" as recited in independent claim 13, from which claims 15 and 17 depend. Further, since Akira teaches a completely different control characteristic than that provided by the presently amended claims, it is therefore submitted that there is no possibility of combining the references to arrive at the presently-claimed invention. It is therefore believed that claims 15 and 17 fully distinguish over the cited references.

In view of the foregoing amendments and remarks, applicant believes the application should be in condition for allowance. If any questions remain, the Examiner is requested to call the undersigned.

Respectfully submitted,

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